

CLIMATOLOGICAL DATA FOR DECEMBER, 1911.

DISTRICT No. 4, THE LAKE REGION.

Prof. HENRY J. COX, District Editor.

GENERAL SUMMARY.

December, 1911, in the Lake region was characterized by weather conditions for the most part in sharp contrast to those of the preceding month. November was cold, raw, disagreeable, windy, and cloudy, with exceptionally frequent precipitation of which a very large proportion was snow, with dangerous storms and severe cold waves. December, with the exception of a few days, was mild, and the storms were neither of markedly rapid movement, nor, at the most, of more than ordinary severity. As a result of the continued warmth the ground was free from frost during a large portion of the month, and considerable plowing, unusual for this season of the year, was done in the eastern and southern sections, except where rains interfered with the progress of outdoor work. In the northern forests the continued warm weather retarded more or less the operations of the lumbering industry.

As a rule, December sunshine was nearly normal or somewhat above, while the humidity was below the average for the month except in a few localities. Taken as a whole, the month was comparatively pleasant, with equable temperature and well distributed precipitation. The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States lying within District No. 4	Mean temperature.		Mean precipitation.		Greatest precipitation in 24 hours.		Mean snowfall (inches).		Number of days—				Prevailing wind direction.
	Mean	Departure.	Mean	Departure.	Greatest	precipitation in 24 hours.	With 0.01 inch or more.	Clear.	Partly cloudy.	Cloudy.			
Minnesota.....	19.3	+4.8	1.67	+0.79	0.53	16.6	9	10	7	14	w.		
Wisconsin.....	27.7	+6.2	2.11	+0.52	1.62	14.2	7	10	8	13	sw.		
Illinois.....	35.0	+5.7	2.54	+0.47	0.60	7.8	16	8	9	14	sw.		
Indiana.....	33.5	+6.2	2.27	-0.18	0.80	8.1	10	8	5	18	sw.		
Upper Michigan.....	26.5	+0.8	2.64	+0.72	2.00	18.9	11	8	6	17	sw.		
Lower Michigan.....	31.3	+5.1	1.94	-0.26	2.30	9.9	9	7	7	17	sw.		
Ohio.....	34.9	+5.2	3.06	+0.42	0.80	6.6	14	6	5	20	sw.		
Pennsylvania.....	37.2	+5.5	3.41	+0.35	0.99	11.1	19	4	5	22	s.		
New York.....	32.1	+8.0	2.55	-0.40	1.40	6.5	12	6	9	16	w.		
Vermont.....	30.6	+7.7	2.77	+0.37	1.31	5.8	12	7	6	18	s.		

TEMPERATURE.

The mean temperature of December was above normal in all portions of the Lake region, the excess ranging from about 5° over the western to about 8° over the extreme eastern sections, while the average departure of the district as a whole was about $+6^{\circ}$. In fact, the mean

temperature for the month was only 1.4° lower than that of November, 1911, the difference ranging in the various portions of the district from 1° to 2.7° .

The first few days of the month were cold, the lowest readings of the period occurring on the 4th or 5th over the region from Indiana eastward. By the 6th, however, under the influence of low barometric pressure to the northward and northwestward of the upper lakes, a general moderation set in, and warm weather prevailed thereafter until the middle of the last decade, unbroken except for one or two days along the eastern shore of Lake Michigan and in the New York and Vermont sections. During these three weeks mean daily temperatures exceptionally high for the season occurred on several dates, especially during the 8-12th, the highest readings of the month occurring at most stations on the 10th or 11th. The warmth was decided over that portion of the district east of Ohio, where from the 8th to the 12th, inclusive, the temperatures averaged from 20° to 22° above normal values. A sharp drop in temperature, reaching cold-wave severity at a number of stations, followed the passage eastward of the storm that crossed the Lake region on the 26-28th, bringing the lowest temperatures of the month over the western and southwestern sections. On the 31st temperatures were again generally above the seasonal averages, but fell rapidly throughout the western portions of the district, due to the passage of a deep atmospheric depression which was central north of the upper lakes on the evening of that day, and to the closely following anticyclonic area.

The mean daily range in temperature was quite small, being on the average from 10° to 12° . The highest reading of the month was 68° , at Howe, Ind., on the 9th, and the lowest, -21° , at Stephens Mine, Minn., on the 28th, making an absolute range for the district of 89° .

PRECIPITATION.

While the average values for the various portions of the States lying within the limits of the Lake region show the amount of December precipitation to have been within 1 inch of the normal, yet the distribution was quite irregular, and there are areas, usually small, where departures of from 1 to 2 inches were recorded. In the Keweenaw Peninsula of upper Michigan, in lower Michigan (except the central counties), in much of northern Indiana, and practically all of the New York portion of the district, the amount of precipitation was deficient. Throughout the other sections the amounts received were generally greater than the seasonal average, the excess reaching 1 inch or more over the middle counties of upper Michigan, northeastern Wisconsin, and in Wyandot, Crawford, and Hancock Counties in Ohio.

Precipitation was frequent throughout the month, but not in so great a degree as was the case during November. Rain or snow occurred in fairly distinct periods west of the eighty-third meridian, where the 1st-3d, 7-10th, 16-18th, 21st-22d, and 26th-31st marked the times of the greatest falls. To the eastward precipitation occurred on the 1st-4th, and with but slight interruptions from the 9th to the close of the month.

Snow.—Over the extreme northwestern sections practically all of the precipitation of the month occurred as snow, the proportion of rain increasing toward the southern and eastern limits of the district, where the proportion of snowfall to rainfall was about 1 to 5. Considerably more than the average amount of December snowfall was received over the region around western Lake Superior, there being but one December with a greater record during the past 10 years. The depth of fall decreased to the eastward, however, and there was a deficiency over most of the sections beyond Lake Michigan. In the New York and Vermont portions the average amount of snow occurring during the month was the least recorded in any December of the present century, and was 9.1 inches and 7.6 inches, respectively, below the previous 10-year mean.

At the opening of the month the ground was bare over the southern portions of the district, but the snows which occurred during the cold spell of the 1st-5th covered the entire region with depths of from 3 to 18 inches. Before the close of the next week, however, the influence of the excessive warmth noted above, together with the occurrence of rains in many localities, resulted in a rapid melting of the snow, leaving most of the district bare, except in the Lake Superior region and in the highlands of the east. During the following fortnight the snow covering varied a great deal over the middle and northern sections, but the ground remained bare to the southward of Lake Erie. The colder weather and snowfall near the close of the month, however, caused a general deepening of the blanket except along the southern boundaries, and on the 31st the depths ranged from 10 to 20 inches on the Superior shore, decreasing thence southward and eastward over the Lake chain, but increasing again to similar depths in the lower St. Lawrence Valley.

ICE CONDITIONS AND NAVIGATION.

Owing to the prevailing high temperatures of the month but little, if any, ice was noted in the lower Lakes, nor in Lakes Michigan and Huron until late in the period. In Lake Superior, also, but little ice was noted at the eastern end. Fishing tugs suspended work at Marquette on the 13th, not because of interference of ice, but because the lake herring rose to the surface out of reach of the nets. Over the western portions of the lake, however, there was considerable ice, ranging from 6 inches in Portage Lake to about 12 inches in Duluth Harbor.

The display of storm warnings by the Weather Bureau was discontinued for the season at the termination of December 5. General navigation at most stations either had closed by this time or did close within a few days thereafter. Local navigation at a few points continued as usual throughout the month, the channels being kept open by ice breakers wherever necessary.

DECEMBER, 1911, LAKE LEVELS.

The following data are from the report of the United States Lake Survey Office:

Lakes.	Feet above tidewater, New York.
Superior.....	601.88
Michigan-Huron	579.46
Erie.....	571.46
Ontario.....	244.63

Lake Superior is 0.18 foot lower than last month, 0.47 foot higher than a year ago, 0.56 foot below the average stage of December for the last 10 years, 1.25 feet below the high stage of December, 1900, and 0.68 foot above the low stage of December, 1879. It will probably fall 0.3 foot during January.

Lakes Michigan-Huron are 0.10 foot higher than last month, 0.04 foot lower than a year ago, 0.77 foot below the average stage of December for the last 10 years, 3.14 feet below the high stage of December, 1885, and 0.46 foot above the low stage of December, 1895. They will probably fall 0.1 foot during January.

Lake Erie is 0.33 foot higher than last month, 0.12 foot higher than a year ago, 0.24 foot lower than the average stage of December for the last 10 years, 2.07 feet below the high stage of December, 1885, and 0.60 foot above the low stage of December, 1895. It will probably remain about stationary during January.

Lake Ontario is 0.13 foot higher than last month, 0.26 foot lower than a year ago, 0.74 foot lower than the average stage of December for the last 10 years, 2.98 feet below the high stage of December, 1861, and 1.20 feet above the low stage of December, 1895. It will probably remain about stationary during January.

SUMMARY OF YEAR 1911.

The year 1911 in the Lake region presented several features of interest with respect to temperature and precipitation. On the whole, it was considerably warmer than the average in all portions of the district, the mean daily excess amounting to about 2° over the upper peninsula of Michigan and in the New York section. The excess was nearly as great over the remaining portions, except those of Minnesota and Vermont, where it was about 0.5° .

Following the cold months of November and December, 1910, the first three months of 1911 were much warmer than usual, with the exception of the extreme east, where March was deficient in temperature. April was moderately cold but throughout May and the following summer months the weather was of extraordinary warmth. Indeed, May was so warm as to present temperature values comparable with those of the mid-summer season. After the abnormal heat of the summer, however, the autumn was generally cool and during November occurred a remarkable succession of severe storms accompanied by high and dangerous winds, tornadic disturbances, and cold waves. In December there was a reversion to conditions of unseasonable warmth, the temperature excess of the month being even greater than was the deficiency of November, and to more settled conditions with respect to storm movement.

As regards precipitation, those portions of the district lying between Pennsylvania and Minnesota received amounts in excess of the average values, the departures

reaching nearly 4 inches over the Ohio and Wisconsin sections. To the eastward, however, there was a decided deficiency, increasing to about 6 inches in the Lake Champlain watershed.

As a rule, over the western and northwestern portions of the Lake region the first seven months of the year were characterized by varying amounts of precipitation, first below normal, then above, but with an aggregate of less than average values. But over the extreme eastern portions the precipitation was deficient up to, and including,

August. In fact, in that part of Vermont which is in this district, there was but one month in the 12 previous to August—that of October, 1910—in which an amount of precipitation in excess of the normal occurred. From August to the close of the year there was, in general, an abundance of precipitation, especially over the middle and western portions.

The following tables present the monthly values of temperature and precipitation, and the departures from the normals, for the various portions of the district:

MEAN TEMPERATURE, 1911.

Portions of States lying in District No. 4.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
Minnesota.....	4.5	16.8	28.8	39.1	53.2	62.9	64.3	61.1	53.0	41.4	20.4	19.3	38.7
Wisconsin.....	17.9	25.3	33.4	41.8	58.2	68.0	70.0	66.3	59.6	47.0	28.7	27.7	45.3
Illinois.....	29.2	32.4	39.2	46.1	66.0	72.4	76.0	77.8	67.0	53.3	35.4	35.0	52.5
Indiana.....	28.6	30.6	36.8	46.5	66.6	71.3	73.9	70.7	65.5	51.4	34.9	33.5	50.9
Upper Michigan.....	15.0	20.1	27.3	38.9	53.8	62.1	65.3	62.2	54.8	44.1	27.5	26.5	41.5
Lower Michigan.....	24.2	26.6	31.6	42.8	61.8	67.7	71.4	66.4	61.1	48.2	34.0	31.3	47.3
Ohio.....	30.7	31.8	35.6	46.5	66.0	70.3	73.7	71.4	66.1	51.6	36.6	34.9	51.3
Pennsylvania.....	30.4	29.6	33.0	44.6	63.0	67.6	72.8	70.0	64.2	51.5	38.0	37.2	50.2
New York.....	22.6	20.8	27.4	39.4	62.0	62.2	71.4	68.0	58.7	48.2	33.7	32.1	45.5
Vermont.....	19.1	15.0	24.3	39.6	61.9	62.3	71.3	67.2	56.4	46.1	33.3	30.6	43.9

MEAN DEPARTURES FROM NORMAL TEMPERATURE, 1911.

Minnesota.....	-4.6	+6.0	+5.2	-0.1	+3.8	+3.1	-0.4	-1.7	-2.2	-2.1	-6.9	+4.8	+0.4
Wisconsin.....	+0.2	+7.8	+4.1	-0.6	+5.2	+5.2	+1.4	-0.9	-0.7	-1.3	-5.2	+6.2	+1.8
Illinois.....	+5.5	+7.0	+4.8	+0.2	+9.5	+6.1	+3.6	+0.6	+2.4	+0.1	-3.8	+5.7	+3.5
Indiana.....	+2.6	+6.0	-1.4	-2.0	+6.3	+2.4	0.0	-1.1	+0.4	-2.2	-5.3	+6.2	+1.0
Upper Michigan.....	+0.4	+7.6	+4.1	+0.9	+5.6	+3.4	+1.4	-0.4	-0.8	-0.8	-4.0	+6.8	+2.0
Lower Michigan.....	+2.2	+6.7	+0.7	-0.5	+6.3	+2.5	+1.6	+0.1	-0.4	-1.3	-2.7	+5.1	+1.7
Ohio.....	+9.4	+7.3	-1.3	-1.4	+6.3	+2.0	+0.7	+0.7	+1.2	-0.9	-3.4	+5.2	+1.7
Pennsylvania.....	+3.9	+3.5	-0.1	-0.1	+5.7	+0.6	+1.0	+0.1	+0.3	-1.6	-3.1	+5.5	+1.3
New York.....	+2.6	+2.0	-2.5	-0.9	+6.9	-0.2	+2.5	+1.6	-1.5	-0.5	-2.4	+8.0	+1.3
Vermont.....	+2.1	-3.0	-3.2	-2.5	+6.8	-2.6	+2.8	+1.7	-1.8	-1.0	-0.9	+7.7	+0.5

MEAN PRECIPITATION, 1911.

Minnesota.....	0.76	1.38	1.42	1.14	3.52	3.11	4.78	4.33	4.03	1.10	1.54	1.67	28.78
Wisconsin.....	0.96	2.16	0.91	1.90	4.32	3.14	2.82	3.17	5.14	4.67	2.99	2.11	34.29
Illinois.....	1.17	2.27	1.45	3.03	3.37	2.54	2.11	4.91	4.03	3.79	3.27	2.54	34.48
Indiana.....	1.88	1.58	1.66	4.24	2.14	4.60	2.48	3.26	3.92	3.98	3.16	2.27	35.17
Upper Michigan.....	1.61	1.74	1.63	0.82	3.90	2.46	5.87	3.05	2.77	3.13	3.00	2.64	33.52
Lower Michigan.....	1.61	2.02	1.17	2.47	3.64	3.11	1.73	2.69	4.01	4.98	3.53	1.94	32.90
Ohio.....	2.97	1.99	1.70	3.84	1.79	4.37	2.06	4.79	3.97	4.98	3.13	3.06	38.65
Pennsylvania.....	4.05	2.11	1.66	2.47	2.49	2.40	2.14	5.76	4.14	3.47	3.14	3.41	37.24
New York.....	2.33	2.97	2.57	1.41	2.31	3.30	2.84	3.73	3.42	2.98	2.05	2.55	33.06
Vermont.....	1.59	1.84	2.39	0.87	1.47	2.80	3.13	3.73	3.53	3.75	2.17	2.77	30.04

MEAN DEPARTURES FROM NORMAL PRECIPITATION, 1911.

Minnesota.....	-0.07	+0.65	-0.10	-1.03	+0.07	-1.45	-0.03	+0.65	+0.44	-1.84	+0.41	+0.79	-1.51
Wisconsin.....	-0.67	+0.80	-1.22	-0.67	+0.68	-0.33	-1.47	+0.12	+2.34	+2.66	+1.08	+0.52	+3.84
Illinois.....	-0.83	+0.11	-1.10	+0.15	0.00	-1.12	-0.80	+2.14	+1.01	+1.24	+0.77	+0.47	+2.04
Indiana.....	-0.63	-0.58	-1.51	+1.38	-1.78	+1.33	-1.10	+0.21	+0.99	+1.66	+0.97	-0.18	+0.76
Upper Michigan.....	-0.13	+0.26	-0.26	-1.27	+0.72	-0.45	+2.34	-0.02	-0.77	+0.43	+1.41	+0.72	+2.98
Lower Michigan.....	-0.58	+0.10	-1.19	+0.20	+0.27	+0.04	-1.51	-0.16	+1.32	+2.33	+1.00	-0.26	+1.56
Ohio.....	+0.53	-0.40	-1.34	+1.18	-1.84	+0.73	-1.78	+1.95	+1.17	+2.10	+0.51	+0.42	+3.73
Pennsylvania.....	+1.02	-0.74	-1.00	+0.07	-0.94	-1.35	-1.07	+2.50	+0.65	-0.33	-0.47	+0.35	-1.31
New York.....	-0.47	+0.62	-0.41	-1.05	-1.09	-0.02	-1.22	+0.67	+0.40	-0.33	-0.43	-0.40	-4.33
Vermont.....	-0.88	-0.52	-0.22	-1.06	-1.71	-0.80	-1.04	-0.45	+0.50	+1.09	-1.01	+0.37	-5.83

TABLE 1.—Climatological data for December, 1911. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.								
Minnesota.																						
Cloquet.....	Carlton.....	800	...	19.4	+ 2.5	43	5	- 15	26	33	1.66	+ 0.46	12.0	6	5	7	8	16	w.	S. B. Detwiler.		
Duluth.....	St. Louis.....	1,133	40	20.2	+ 2.5	40	9	- 13	28	24	2.17	+ 0.95	24.3	15	7	8	16	nw.	U.S. Weather Bureau.			
Floodwood.....	do.....	1,257	6	4	15.5	43	9	- 21	28	36	1.37	-	10.5	5	14	1	16	s.	M. H. Schussler.			
Stephens Mine.....	do.....	1,500	4	17	+ 5.5	42	5	- 13	28	32	2.27	+ 1.37	11.8	10	16	10	15	w.	Oliver Mining Co.			
Two Harbors.....	Lake.....	614	17	24.0	+ 6.4	40	9	- 19	28	31	1.23	+ 0.04	30.0	10	3	15	13	s.	G. W. Watts.			
Virginia.....	St. Louis.....	1,434	17	17.2	+ 6.4	40	9	- 19	28	31	1.23	+ 0.04	10.8	9	12	1	18	s.	Oliver Iron Mining Co. .			
Wisconsin.																						
Appleton.....	Outagamie.....	795	10	28.1	+ 6.6	51	10	- 7	28	23	2.04	+ 0.22	12.9	8	12	9	10	s.	Wm. O. Thiede.			
Ashland.....	Ashland.....	647	20	24.4	+ 4.0	46	5	- 8	28	30	1.48	+ 0.27	17.5	10	10	8	13	sw.	Sam Wheeler.			
Bayfield.....	Bayfield.....	635	2	24.6	-	45	9	- 1	28	26	2.00	-	16.3	10	11	11	11	sw.	John P. Kiel.			
Cecil.....	Shawano.....	804	13	27.2	+ 5.7	46	10	- 12	28	29	1.61	+ 0.09	17.0	8	9	11	11	sw.	Louis W. Schmidt.			
Crandon.....	Forest.....	1,060	16	23.0	+ 6.4	44	5	- 9	28	27	-	-	11.0	4	2	7	22	w.	Frank Shoemaker.			
Florence.....	Florence.....	1,293	20	25.2	+ 7.0	47	5	- 24	28	24	2.22	+ 0.68	11.0	4	11	1	19	ne.	Fred S. Evans.			
Fond du Lac.....	Fond du Lac.....	800	25	29.2	+ 7.4	54	10	- 7	28	29	2.16	+ 0.68	14.0	5	11	3	17	sw.	Geo. W. Marshall.			
Grand River Locks.....	Marquette.....	770	15	27.7	-	52	10	- 10	28	28	1.45	+ 0.11	12.0	6	13	4	14	s.	Jerry Parkinson.			
Green Bay.....	Brown.....	617	25	28.6	+ 7.3	51	10	- 6	28	24	2.20	+ 0.39	14.1	9	5	9	17	sw.	U.S. Weather Bureau.			
High Falls.....	Marinette.....	810	0	25.3	-	48	5	- 9	28	31	2.22	-	19.0	8	1	28	2	sw.	No. Hydro-Elect. Power Co.			
Iron River.....	Bayfield.....	1,096	2	22.2	-	46	9	- 11	28	30	2.20	-	32.0	8	12	3	16	w.	Winfield E. Tripp.			
Keweenaw.....	Keweenaw.....	590	26	29.6	-	49	10	- 3	28	27	-	-	1.00	4	12	4	12	w.	Eugene V. Kimball.			
Manitowoc.....	Manitowoc.....	616	60	30.8	+ 5.9	52	10	- 3	28	27	2.24	+ 0.42	7.0	9.5	6	7	18	s.	Johanna Lups.			
Menasha.....	Winnebago.....	764	14	-	-	-	-	-	-	-	0.78	- 0.30	24.0	6	11	9	11	sw.	Geo. T. Allanson.			
Menomonee Falls.....	Waikeshi.....	842	2	28.7	-	54	10	- 5	28	28	2.10	-	6.2	9	12	6	13	sw.	Arthur H. Christman.			
Milwaukee.....	Milwaukee.....	681	40	32.4	+ 6.4	58	10	- 1	28	28	1.53	- 0.39	5.2	10	9	8	14	sw.	U.S. Weather Bureau.			
New London.....	Outagamie.....	762	15	27.2	+ 7.4	49	10	- 11	28	26	2.89	+ 1.47	23.0	7	5	5	21	sw.	August H. Pape.			
Oconto.....	Oconto.....	590	20	27.6	+ 5.0	47	11	- 6	28	29	3.97	+ 2.17	22.0	7	10	10	11	s.	Wm. K. Smith.			
Oshkosh.....	Winnebago.....	744	22	27.6	+ 4.7	53	10	- 11	28	25	1.74	+ 0.35	13.0	5	14	10	7	sw.	Evan Vincent.			
Pine River.....	Waushara.....	900	16	27.4	+ 6.7	51	10	- 11	28	28	2.35	+ 0.95	13.3	8	8	11	12	sw.	Geo. H. Carpenter.			
Plum Island.....	Door.....	588	3	31.1	-	46	10	- 7	28	20	2.30	-	16.0	11	7	10	14	sw.	Geo. C. Robinson.			
Plymouth.....	Sheboygan.....	843	1	29.3	-	53	10	- 5	28	27	1.87	-	10.5	6	14	6	11	sw.	Paul O. Feldrappe.			
Port Washington.....	Ozaukee.....	713	18	31.0	+ 7.3	58	10	- 5	28	27	1.87	+ 0.11	12.4	6	10	6	15	sw.	Richard C. Kann.			
Racine.....	Racine.....	633	14	31.3	+ 5.9	58	10	- 1	28	24	1.40	- 0.07	3.2	5	8	17	1	sw.	Daniel Davis.			
Ripon.....	Fond du Lac.....	935	1	29.0	-	51	10	- 7	28	29	1.93	-	13.1	6	14	1	11	sw.	Ripon College.			
Sheboygan.....	Sheboygan.....	831	12	31.2	+ 5.6	58	11	- 4	28	26	2.65	+ 0.88	10.0	8	12	8	11	sw.	Louis C. Meyer.			
Sturgeon Bay.....	Door.....	600	12	29.5	+ 5.1	48	10	- 2	28	25	3.16	-	26.0	7	13	5	15	s.	Adam N. Dier.			
Superior.....	Douglas.....	671	2	21.8*	-	42*	6	- 10	28	30*	1.00	-	6.3	10	8	8	15	sw.	Edward B. Banks.			
Waupaca.....	Waupaca.....	857	16	25.8	+ 6.3	48	10	- 12	28	34	2.68	+ 1.40	1.34	23.5	5	8	5	18	sw.	James H. Flagg.		
Illinois.																						
Chicago.....	Cook.....	824	41	35.0	+ 5.7	60	10	5	28	27	2.54	+ 0.47	6.0	7.8	16	8	9	14	sw.	U. S. Weather Bureau.		
Indiana.																						
Auburn.....	Dekalb.....	874	15	31.4	+ 5.4	59	10	9	47	34	1.93	- 0.20	0.63	-	11	6*	2*	22*	sw.	Mrs. Josie B. Kuhlman.		
Berne.....	Adams.....	849	2	34.8	-	59	10	0	4	32	3.23	-	0.78	6.4	13	7	5	19	sw.	Henry M. Reusser.		
Elkhart.....	Elkhart.....	801	9	33.8	+ 5.8	50*	10	9*	47	27*	1.90	-	0.62	6.2	7	9*	6*	15	se.	Dr. Miles Medical Co.		
Fort Wayne.....	Allen.....	856	15	33.8	+ 6.5	60	10	6	4	25	2.93	+ 0.45	0.65	8.9	15	5	3	23	sw.	U. S. Weather Bureau.		
Hammond.....	Lake.....	598	20	35.0	+ 8.1	60*	10*	12*	19	21*	2.49	+ 0.29	0.80	6.5	8	10*	5	15*	sw.	Carson W. Whitney.		
Howe.....	Lagrange.....	886	6	33.7	-	68	9	28	30	28	2.18	-	0.70	8.5	7	13	0	18	sw.	James E. Zook.		
South Bend.....	St. Joseph.....	726	18	31.8	+ 4.6	59	10	5	4	30	1.71	- 1.27	0.50	12.5	11	6	4	21	sw.	Henry H. Swaim.		
Whiting.....	Lake.....	606	2	33.8	-	59	10	5	28	31	1.82	-	0.50	8.0	8	9	11	11	sw.	D. H. Boyd.		
Michigan—Upper Peninsula.																						
Baraga.....	Baraga.....	623	9	-	-	50	- 9	- 12	29	28	2.11	-	0.66	-	11	7	5	19	w.	D., S. S. & A. Ry.		
Bergland.....	Ontonagon.....	1,300	1	23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sw.	Frank McMonigal.		
Blaney.....	Schoolcraft.....	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sw.	E. S. Grierson.		
Calumet.....	Houghton.....	1,246	23	25.4	+ 4.2	44	6	2	28	18	3.11	+ 0.07	0.71	28.0	19	7	3	21	sw.	Upper Peninsula Exp. Sta.		
Chatham.....	Alger.....	875	10	25.2	+ 5.8	48	5	- 3	3	31	2.71	- 0.16	0.54	-	15	6	2	23	sw.	Mrs. Sarah E. McGaw.		
Deer Park.....	Luce.....	610	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sw.	Lincoln Melvin.		
Detour.....	Chippewa.....	585	10	31.4	+ 8.8	55	11	8	2	25	-	-	-	-	3	15	3	7	7	sw.	John Nolen.	
Eagle Harbor.....	Keweenaw.....	622	12	30.0	+ 6.6	47	6*	8	28	20	2.02	-	0.47	0.40	17.1	9	5	2	24	sw.	U. S. Weather Bureau.	
Escanaba.....	Delta.....	612	38	27.9	+ 6.3	44	10	- 7	28	22	2.69	+ 0.99	1.27	10.4	12	6	3	22	sw.	W. B. Hatfield.		
Ewen.....	Ontonagon.....	1,147	10	22.5	+ 6.6	48	9	- 9	26	31	3.47	+ 1.59	0.50	31.0	14	6	1	24	sw.	Mrs. Lena Truedell.		
Grand Marais.....	Alger.....	610	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sw.	T. A. Green.		
Green.....	Ontonagon.....	622	0	30.4	-	48	11	1	31	27	1.99	-	0.70	17.0	5	10	9	12	sw.	U. S. Weather Bureau.		
Houghton.....	Houghton.....	668	10	26.4	+ 4.9	49	6	5	28	29	2.30	-	0.17	0.72	24.0	18	9	3	19	w.	D., S. S. & A. Ry.	
Humboldt.....	Marquette.....	1,536	14	24.4*	+ 9.3	48*	10	- 2*	3*	35*	3.90	+ 2.90	2.00	19.0	9	5	3	22	sw.	Chapin Mining Company.		
Iron Mountain.....	Dickinson.....	1,111	10	26.9	+ 7.4	49	5	0	28	30	2.21	+ 1.02	0.75	12.5	9	4	17	10	sw.	Victor D. Laing.		
Iron River.....	Iron.....	1,504	12	23.6	+ 7.9	50	8	- 4														

TABLE 1.—Climatological data for December, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
Michigan—Lower Peninsula—Continued.																					
Ann Arbor.....	Washtenaw.....	930	31	31.8	+ 5.1	58	10	9	29	30	1.63	- 0.59	0.40	5.0	14	4	6	21	sw.	University of Michigan.	
Arbela.....	Tuscola.....	728	15	30.9	+ 5.0	58	11	7	4	22	2.26	- 0.07	0.40	8.5	10	0	9	22	sw.	Wm. Atkin.	
Battle Creek.....	Calhoun.....	822	27	31.8	+ 4.2	58	10†	6	4	24	2.32	- 0.15	0.56	8.0	9	5	4	22	sw.	Elmer E. Sager.	
Bay City.....	Bay.....	593	15	31.1	5.5	58	10	9	20	25	4.12	+ 2.26	1.38	10.0	12	18	3	10	w.	Pere Marquette Railroad.	
Benzonia.....	Benzie.....	832	15																w.	Wallace Nutting.	
Berlin.....	St. Clair.....	922	22	31.0	+ 4.5	56	11	12	20†	27	0.99	- 0.25	0.41	12.5	15	5	2	24	sw.	R. O. Gould.	
Big Rapids.....	Mecosta.....	906	15	29.8	+ 6.0	57	11	2	20	25	2.17*	- 0.16	0.80*	7.5	10†	3	12	16	w.	Supt. Water Works.	
Bloomingdale.....	Van Buren.....	7	32.2	.....	58	10†	3	4	29	4.99			1.50	5.8	8	6	4	21	sw.	John M. Haven.
Cadillac.....	Wexford.....	1,293	2	28.8	.....	56	11	4	29	22	1.78	- 0.72	1.40	9	13	3	15	w.	Cadillac W. & L. Company.	
Cassopolis.....	Cass.....	903	10																w.	Michigan Central R. R.	
Charlevoix.....	Eaton.....	610	33	32.8	+ 4.5	54	10	12	28†	18	1.70	- 0.93	1.00	7.0	3	28	0	3	nw.	Pere Marquette R. R.	
Charlotte.....	Cheboygan.....	7	21	29.2	+ 5.3	50†	9†	11†	28†	21†	2.02	+ 0.13	0.72	26.0	4	30	17†	5	e.	City of Charlotte.	
Cheboygan.....	Clinton.....	830	21	33.4	+ 5.6	56	10†	4	29	31	1.67	- 0.82	0.55	5.0	7	7	7	17	sw.	E. A. Bouchard.	
Coldwater.....	Branch.....	984	14	33.0	+ 6.3	58	11	3	2	38	1.17	- 1.36	0.40	8.5	8	7	1	23	sw.	David Woodward.	
Concord.....	Jackson.....	6	32.0	.....		58	11	0	4	30	1.00		0.30	4.5	7	11	13	7	sw.	L. S. & M. S. R. R.
Croton.....	Newaygo.....	685	3	31.0	.....	56	10†	8	4	25	1.68		0.61	10.0	7	3	15	13	sw.	W. N. Armstrong.
Detroit.....	Wayne.....	730	40	34.0	+ 4.5	59	10	14	28	28	1.94	- 0.45	0.69	3.8	15	5	6	20	sw.	Gr. Rap. Musk. Power Co.	
Durand.....	Shiawassee.....	799	4			46	22†	12†	28	24†				10.0					w.	U. S. Weather Bureau.	
East Tawas.....	Iosco.....	590	14	31.0	+ 6.3	50	10	11	20†	22	2.05	+ 0.56	0.60	12.0	7	19	5	5	w.	H. J. Tobin.	
Eloise.....	Wayne.....	640	14	33.2	+ 6.8	58	11	13	28†	22	1.68	- 0.82	0.35	4.5	15	7	6	18	w.	Detroit & Mackinaw Ry.	
Flint.....	Genesee.....	730	22	32.4	+ 5.8	55	10†	9	4	21	1.19	- 0.60	0.20	6.0	10	5	8	18	w.	John Gilmore.	
Frankfort.....	Benzie.....	589	7	32.6	.....	52	10†	12	28	17	1.80		0.70	9.0	6	1	0	30	s.	William L. Fisher.
Ganges.....	Allegan.....	665	2	32.7	.....	58	10	12	29	23	1.98		0.45	12.2	11	9	7	15	sw.	George Morey.
Gaylord.....	Otsego.....	1,367	11	27.1	+ 5.2	50	11	1	29	20	2.34	+ 0.28	0.78	10.0	7	2	5	24	sw.	H. H. Hutchins.	
Gladwin.....	Gladwin.....	794	15	30.6 ^d	+ 5.6	63 ^d	11	3d	20	29 ^d	2.25	+ 0.43	0.90	9.0	5	15 ^d	0 ^d	20	sw.	Michigan Central Railroad.	
Grand Haven.....	Ottawa.....	628	30	32.8	+ 2.7	56	10	13	28	23	3.16	+ 0.65	0.54	19.2	17	7	6	18	sw.	George R. Smith.	
Grand Rapids.....	Kent.....	707	22	32.8	+ 4.0	60	10	13	28	23	2.56	+ 0.02	0.68	15.9	16	6	5	20	s.	U. S. Weather Bureau.	
Grape.....	Monroe.....	625	21	33.5	+ 4.9	58	11	10	4†	24	1.99	- 0.04	0.44	3.8	5	3	9	19	w.	Do.	
Grass Lake.....	Jackson.....	989	5	31.2	.....	57	10†	5	4	24	1.84		0.35	6.0	11	11	2	20	sw.	Joseph W. Morris.
Grayling.....	Crawford.....	1,147	21	27.8	+ 4.9	52	10†	5	29	24	2.42	+ 0.09	0.62	15.8	9	7	5	19	w.	Menzo Conklin.	
Harbor Beach.....	Huron.....	635	23	32.6	+ 5.4	54	11†	8	30	34	1.25	- 0.57	0.50	12.5	5	7	13	11	w.	S. N. Insley.	
Harrison.....	Clare.....	1,159	18	30.0 ⁱ	+ 6.6	48†	6†	4	20	30 ⁱ									w.	Pere Marquette Railroad.	
Harrisville.....	Aloma.....	616	27	30.0	+ 5.5	52	11	9	29	25	1.87	- 0.68	0.45	11.7	9	6	12	13	nw.	Do.	
Hart.....	Oceana.....	698	19	30.8	+ 2.3	48	10	12	30	18	1.45	- 1.32	0.30	18.0	7	6	13	16	sw.	Pere Marquette Railroad.	
Hayes.....	Huron.....	620	21	31.5	+ 4.3	58	11	8	20†	24	1.51	- 0.14	0.30	7.8	10	8	7	16	sw.	C. F. Leipprandt.	
Highland.....	Oakland.....	830	19																sw.	A. D. DeGarmo.	
Hillsdale.....	Hillsdale.....	1,150	14	31.4	+ 6.1	55	10†	6	4	25	1.69	- 0.75	0.51	6.8	9	9	1*	20*	sw.	C. L. Herron.	
Holland.....	Ottawa.....	610	5	32.5	.....	59	10	6	4	29	2.26		0.36	10.7	14	3	10	18	sw.	City of Holland.
Howell.....	Livingston.....	924	19	30.8	+ 4.2	58	11	5	5	27	1.88	+ 0.15	0.65	4.0	11	8	8	15	sw.	Frank Sharp.	
Ivan.....	Kalkaska.....	22	27.6	+ 3.6	53	11	0	28	33	1.55	- 0.76	0.30	11.5	9	6	12	13	sw.	O. L. Giddings.		
Jackson.....	Jackson.....	927	14	32.8	+ 6.3	57	11	6	4	25	1.10	- 0.92	0.28	6.5	6	7	8	16	sw.	City of Jackson.	
Jeddo.....	Aloma.....	667	22	30.9	+ 4.1	55	11	11	29	22	1.96	- 0.22	0.30	10.1	14	7	4	20	sw.	William Bice.	
Kalamazoo.....	Kalamazoo.....	955	35																w.	Kalamazoo Asylum.	
Lansing (Agr. College).....	Ingham.....	820	47	31.1	+ 4.3	57	10	6	4	26	1.58	- 0.50	0.55	10.1	14	7	2	22	sw.	U. S. Weather Bureau.	
Lansing (Capitol).....	.....	884	24	32.4	+ 4.7	58	11	9	4	24	1.62	- 0.43	0.36	12.0	13	5	5	21	sw.	State Board of Health.
Lapeer.....	Lapeer.....	827	12	32.6	+ 7.1	58	12	10	19	26	1.12	- 0.24	0.32	3.7	7	1*	21*	8*	w.	Michigan Home.	
Ludington.....	Mason.....	586	13	32.2	+ 5.3	52	11	10	28†	22	1.62	- 0.36	0.40	18.0	8	12	8	11	sw.	Pere Marquette Railroad.	
Luther.....	Lake.....	1,028	1	28.8	.....	55	10†	—	29	30	2.03		0.73	11.5	13	7	5	19	sw.	John W. Nicheson.
Mackinaw.....	Cheboygan.....	592	20	33.0	+ 9.1	60	24	15	3	25	1.49	- 0.66	0.80	14.9	6	10	13	8	w.	G. R. & I. Ry.	
Mancelona.....	Antrim.....	1,121	15	27.2	+ 4.8	52	20	10	29	33	2.61	- 0.18	0.00	16.0	7	4	8	19	sw.	Do.	
Manistee.....	Manistee.....	600	14	31.8 ^a	+ 4.2	58	10	8	29	25 ^a	2.95	+ 0.60	1.90	7.0	4	11*	10*	9*	sw.	Pere Marquette R. R.	
Marshall.....	Calhoun.....	896	0																s.	E. B. Stuart.	
Midland.....	Midland.....	604	12	30.2	+ 4.0	56	11	8	20	30	1.22	- 0.14	0.60	12.0	4	3	2	26	ne.	Pere Marquette R. R.	
Morenci.....	Lenawee.....	811	4	33.2	.....	59	11	6	4	25	2.24		0.39	4.3	13	6	3	22	sw.	George J. Tripp.
Mount Clemens.....	Macomb.....	615	11	33.9	+ 6.9	59	11	13	29	27	5.11	+ 0.20	2.30	4.5	10	11	1	19	sw.	Waterworks.	
Mount Pleasant.....	Isabella.....	826	12	28.4	+ 3.6	52	11	10	18	28	0.95	- 0.63	0.68	9.5	3	9*	5*	16*	sw.	Pere Marquette R. R.	
Muskegon.....	Muskegon.....	587	15	32.2	+ 4.5	53	10	11	28	24	1.24		0.87	0.60	13.0	8	25	0	6	w.	G. R. & I. Ry.
Old Mission.....	Grand Traverse.....	588	7	30.8	+ 4.2	56	11	11	28	21	2.10	+ 0.17	0.77	12.4	9	6	7	18	sw.	E. O. Ladd.	
Olivet.....	Eaton.....	934	21	30.8	+ 3.9	56	10	8	29	23	1.84	- 0.71	0.35	12.5	13	6	2	23	w.	G. A. Knapp.	
Omer.....	Arenac.....	616	12	29.8	+ 6.2	58	11	10	31	28	1.90	- 0.43	0.80	11.0	4	3	6	22	sw.	D. & M. Ry.	
Onaway.....	Presque Isle.....	826	8	27.8	.....	54	11	5	29	23	2.20		1.50	13.0	4	10	5	16	s.	Do.
Owosso.....	Shiawassee.....	731	14	32.9	+ 6.6	62	11	7	4	26	1.46	- 0.18	0.30	6.2	13	3	12	16	sw.	Owosso Sugar Co.	
Petoskey.....	Emmet.....	600	21	31.8	+ 6.0	64	10	15	28	29	1.87	- 0.68	0.52	15.4	12	6	5	20	s.	G. R.	

TABLE 1.—Climatological data for December, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.				Precipitation, in inches.				Sky.	Prevailing wind direction.	Observers.							
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
Ohio—Continued.																					
Findlay.....	Hancock.....	776	22	33.0	+ 2.3	59	10	4	47	36	3.73	+ 1.21	0.80	8.0	13	10	12	9	sw.		
Fremont.....	Sandusky.....	628	9	35.8	-	60	10†	9	4	25	2.76	-	0.66	6.5	11	10	1	20	sw.		
Hedges.....	Paulding.....	725	17	33.8	+ 5.3	65	10	2	4	31	3.78	+ 0.94	0.91	2.5	11	7	8	16	w.		
Hillhouse.....	Lake.....	997	18	35.2	+ 6.3	60	11	3	4	26	3.15	-	0.06	0.56	8.0	16	5	1	25	sw.	
Hiram.....	Portage.....	1,260	31	34.4	+ 5.2	59	11	9	4	27	4.11	+ 1.11	0.72	8.5	16	5	1	25	sw.		
Hudson.....	Summit.....	1,153	50	34.0	+ 6.5	59	10†	10†	22	-	-	-	-	-	7	3	21	sw.			
Lima.....	Allen.....	875	12	34.4	+ 6.0	60	11	1	4	27	3.43	+ 0.37	0.62	8.0	10	8	6	17	w.		
Medina.....	Medina.....	944	23	35.2	+ 6.3	59	10†	9	4	28	3.48	+ 0.62	0.65	7.0	14	5	3	23	s.		
Montpelier.....	Williams.....	880	19	33.0	+ 5.0	58	11	4	4	28	2.40	-	0.31	6.4	5	10	4	22	w.		
Napoleon.....	Henry.....	680	24	34.8	+ 5.4	60	10†	13	23†	23	1.88	-	0.56	0.39	4.5	14	7	11	13	sw.	
New Bremen.....	Auglaize.....	1,033	18	34.8	+ 4.5	60	11	1	4	30	2.36	-	0.39	0.58	7.5	12	3	11	17	sw.	
North Royalton.....	Cuyahoga.....	1,000	18	35.0	+ 5.8	60	10	9	4	22	3.10	+ 0.33	0.63	5.0	11	3	6	22	w.		
Norwalk.....	Huron.....	719	25	36.2	+ 5.9	63	11	14	25†	31	3.14	+ 0.57	0.50	6.0	13	4	6	21	sw.		
Oberlin.....	Lorain.....	855	36	35.2	+ 4.7	60	10†	12	4†	30	2.76	+ 0.58	0.41	5.6	14	4	6	21	sw.		
Ottawa.....	Putnam.....	720	16	34.4	+ 4.9	60	10	1	4	28	3.06	+ 0.53	0.64	7.5	13	3	9	19	sw.		
Sandusky.....	Erie.....	629	34	36.0	+ 4.9	62	10	16	4	31	2.20	-	0.15	0.54	5.0	19	5	7	19	sw.	
Tiffin.....	Seneca.....	775	29	35.9	+ 4.8	60	10†	13	4	20	3.25	+ 0.65	0.60	9.5	20	6	5	20	sw.		
Toledo.....	Lucas.....	769	40	35.2	+ 4.7	58	10	15	28	27	3.17	+ 0.87	0.80	8.0	16	7	3	21	sw.		
Upper Sandusky.....	Wandot.....	854	28	34.3	+ 3.2	59	11	7	4	22	3.79	-	1.14	0.80	9.5	12	7	6	18	w.	
Vickery.....	Sandusky.....	588	18	35.6	+ 5.7	61	10†	10	4	26	2.89	+ 0.45	0.47	3.5	16	3	9	19	sw.		
Wauseon.....	Fulton.....	780	39	33.2	+ 5.5	59	10	6	4	24	2.84	+ 0.19	0.54	5.8	16	3	8	20	sw.		
Willoughby.....	Lake.....	649	17	.....	.....	.....	.....	.....	.....	3.29	+ 0.75	0.43	4.7	16	5	3	23	w.		
Pennsylvania.																					
Erie.....	Erie.....	658	38	37.2	+ 5.5	62	10	17	28	31	3.41	+ 0.35	0.90	11.1	19	4	5	22	s.		
New York.																					
Adams Center.....	Jefferson.....	540	20	33.6	+ 9.8	60	10†	4	4	26	3.39	-	0.58	0.79	8.0	16	4	12	15	s.	
Angelica.....	Allegany.....	1,340	28	32.4	+ 6.7	60	11	0	4	29	2.22	-	0.44	0.40	8.0	14	5	2	24	w.	
Appleton.....	Niagara.....	270	20	35.6	+ 6.3	64	10	14	4	21	2.13	-	0.48	0.41	2.5	11	2	6	23	sw.	
Auburn.....	Cayuga.....	715	42	34.7	+ 5.7	62	10	12	4†	24	2.18	-	0.58	0.52	6.0	10	11	3	7	s.	
Avon.....	Livingston.....	585	16	33.9	+ 8.0	64	10	10	4	30	2.19	+ 0.34	0.55	2.0	7	2	8	21	sw.		
Blue Mountain Lake.....	Hamilton.....	1,750	11	34.6	+ 7.2	64	10	9	4	22	2.70	-	0.22	0.67	3.5	7	9	12	10	w.	
Brockport.....	Monroe.....	537	15	34.6	+ 7.2	64	10	9	4	22	2.70	-	0.36	0.69	6.5	17	3	6	22	sw.	
Buffalo.....	Erie.....	767	60	35.7	+ 5.6	62	10	15	4	27	2.42	-	0.95	0.80	5.6	18	3	8	20	sw.	
Canton.....	St. Lawrence.....	443	17	30.4	+ 7.7	61	11	3	4	29	2.77	-	0.82	0.88	5.4	15	5	8	18	sw.	
Cape Vincent.....	Jefferson.....	246	6	32.7	.....	56	11	7	4	26	2.68	-	0.92	1.2	6	7	7	18	w.	
Carvers Falls.....	Washington.....	243	13	30.2	+ 8.4	59	12	9	4	23	2.73	-	0.03	1.20	2.0	7	16	7	s.		
Chazy.....	Clinton.....	151	11	30.8	+ 10.9	55	12	3	5	30	3.02	-	0.62	0.35	2.5	5	8	11	12	n.	
Dannemora.....	do.....	1,490	6	29.0	.....	57	11	0	4	29	2.52	-	0.72	9.0	13	4	5	22	sw.	
Elba.....	Geneesee.....	500	12	32.9	+ 6.9	62	10	4	4	28	2.25	-	0.93	0.60	9.0	6	7	11	13	sw.	
Faust.....	Franklin.....	1,550	0	34.8	+ 9.3	65	10†	0	30	24	2.23	-	0.50	0.38	9.0	12	8	7	16	sw.	
Fayetteville.....	Onondaga.....	530	10	34.8	+ 9.3	65	11	7	4	36	1.75	-	0.24	3.2	14	5	16	10	w.		
Gabriels.....	Franklin.....	1,729	9	27.8	.....	56	11	2	5	28	2.02	-	0.44	0.91	2.5	8	22	7	2	w.
Harkness.....	Clinton.....	622	9	31.2	+ 10.4	58	11	2	5	28	2.02	-	0.44	1.40	T.	4	7	7	17	s.	
Hemlock Lake.....	Livingston.....	900	13	34.9	+ 7.5	57	11†	12	4	21	2.31	-	0.50	1.40	T.	4	7	7	18	nw.	
Hunt.....	do.....	1,321	12	34.6	+ 7.9	65	10	4	5	30	3.08	-	0.30	1.02	2.0	9	6	7	18	w.	
Ithaca.....	Tompkins.....	923	23	34.9	+ 6.5	62	10	11	4	26	1.83	-	0.81	0.68	5.4	18	4	7	20	se.	
Keene Valley.....	Essex.....	1,000	13	32.5	+ 12.8	66	7	3	5	46	2.35	-	0.55	0.51	3.2	11	11	8	12	w.	
King Ferry.....	Cayuga.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.51	0.78	3.5	12	4	4	23	se.
Lake George.....	Warren.....	350	14	32.6	+ 8.4	60	12	7	5	22	2.22	-	0.40	0.78	3.5	12	4	7	19	w.	
Lake Placid Club.....	Essex.....	1,864	3	23.8	.....	53	11	6	20	34	3.12	-	0.46	17.0	15	10	8	13	nw.	
Le Roy.....	Genesee.....	920	21	34.8	+ 7.7	66	10	8	4	24	2.80	-	0.21	0.62	9.0	3	5	23	sw.		
Lockport.....	Niagara.....	650	24	34.3	+ 5.7	62	10	9	4	22	2.15	-	0.36	0.50	5.2	14	5	5	21	sw.	
Lowville.....	Lewis.....	600	44	29.9	+ 7.5	59	11	3	4	27	2.30	+ 0.13	0.60	9	7	8	16	s.			
Moir'a.....	Franklin.....	200	11	30.1	+ 11.0	61	11	7	4	38	2.61	-	0.52	0.50	17.0	11	3	14	14	w.	
Nehasane.....	Hamilton.....	1,750	3	25.8	.....	53	11	8	4	38	4.14	-	0.72	12.5	17	6	11	14	s.	
North Lake.....	Herkimer.....	1,822	10	27	+ 7.1	60	11	2	4	32	2.11	-	0.33	0.80	6.6	7	6	12	13	se.	
Ogdensburg.....	St. Lawrence.....	175	27	28.7	+ 7.1	60	11	7	4	32	2.11	-	0.33	0.80	6.6	7	9	15	w.		
Old Forge.....	Herkimer.....	1,733	3	26.8	.....	50	10†	14	4	23	4.08	-	0.15	8.2	16	7	9	15	w.	
Oswego.....	Oswego.....	335	41	35.2	+ 6.0	59	12	14	4	23	2.97	-	0.62	1.03	2.9	17	5	4	22	s.	
Otto.....	Cattaraugus.....	1,410	7	32.5	.....	59	12	12	20	25	2.96	-	0.65	14.9	10	13	11	7	14	sw.
Palermo.....	Oswego.....	460	52	.....	.....	.....	.....	.....	.....	1.46	.....	-	2.25	0.30	2.2	17	7	10	14	sw.
Perry City.....	Schuyler.....	1,038	31	485	5	32.4	63	11	3	4	22	3.03	-	0.71	6.0	14	4	9	18	w.
Philadelphia.....	Jefferson.....	300	35	32.4	+ 10.2	63	12	5	4	23	3.05	+ 1.06	0.87	4.0	13	13	5	16	w.		
Potsdam.....	St. Lawrence.....	1,522	11	28.0	+ 9.4	56	11	7	4	32	3.52	+ 1.00	1.20	9.5	14	10	5	16	w.		
Raquette Lake.....	Hamilton.....	1,167	12	32.8	+ 6.3	57	10	10	4	27	3.28	-	0.01	0.72	11.0	14	5	4	22	s.	
Rochester.....	Monroe.....	523	82	36.2	+ 7.3	67	10	16	30	24	2.77	-	0.11	0.98	7.5	18	4	5	21	sw.	
Romulus.....	Seneca.....	71																			

TABLE 2.—*Daily precipitation for December, 1911. District No. 4, Lake Region.*

TABLE 2.—*Daily precipitation for December, 1911. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for December, 1911. District No. 4—Continued.*

- Precipitation included in that of the next measurement.

Separate dates of falls not recorded.

Precipitation for the 24 hours ending on the morning when it is measured.
Precipitation is less than 0.01 inch rain or melted snow.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures at selected stations for December, 1911. District No. 4, Lake Region.

Date.	Dubuth, Minn.	Wisconsin.						Chicago, Ill.	Fort Wayne, Ind.	Upper Michigan.						Lower Michigan.												
		Florence.		Green Bay.		Milwaukee.				Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.				
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
1....	31	16	34	22	37	25	39	31	40	29	34	24	37	26	31	5	34	25	36	27	34	17	38	27	34	28	37	24
2....	19	10	29	19	32	23	33	25	35	29	34	28	28	22	28	14	25	19	27	18	17	6	32	21	34	28	33	24
3....	18	12	28	8	27	13	32	19	34	23	30	12	30	16	22	- 4	25	17	28	20	20	4	22	19	30	18	26	11
4....	33	12	37	17	27	9	32	16	36	20	30	6	30	21	34	14	39	21	36	22	34	20	31	20	30	6	28	10
5....	40	25	47	28	36	25	41	30	42	29	39	19	44	26	47	27	43	23	47	27	39	28	42	27	38	21	40	24
6....	38	26	39	18	41	29	44	32	46	33	48	26	39	29	44	18	49	20	45	28	43	24	50	32	43	24	42	30
7....	26	18	40	21	41	22	48	36	49	40	46	33	42	27	37	13	38	26	39	30	38	29	38	32	42	33	40	35
8....	31	22	38	15	40	23	46	36	54	43	54	41	37	24	37	20	39	25	40	28	39	26	42	32	48	37	39	32
9....	40	20	47	27	36	30	46	36	53	50	55	49	37	30	48	25	44	26	47	30	41	35	47	35	50	47	42	36
10....	39	30	42	25	51	36	58	42	60	60	50	44	31	46	29	43	25	47	30	47	35	54	37	58	48	51	36	
11....	30	19	44	31	40	32	42	36	46	40	50	40	40	31	37	26	39	26	41	30	43	34	48	38	55	36	56	34
12....	34	21	35	24	37	30	36	30	40	34	40	34	34	26	34	24	35	26	35	28	34	26	38	31	38	31	37	30
13....	26	11	37	18	38	29	42	28	40	32	42	31	38	27	36	22	34	27	39	27	37	26	41	26	39	29	37	30
14....	32	28	33	28	40	31	40	31	39	34	33	27	38	32	36	23	37	26	35	30	36	29	40	27	34	24	37	27
15....	30	20	35	27	33	29	38	28	41	32	34	30	35	30	34	24	37	28	39	31	34	30	41	29	35	30	34	22
16....	24	19	33	27	37	30	37	30	38	32	40	32	35	27	30	19	32	27	34	31	30	26	35	28	34	28	32	22
17....	27	15	33	16	33	27	30	28	32	33	33	27	33	27	33	22	31	23	33	27	28	20	33	26	33	26	32	18
18....	22	12	32	11	30	26	35	26	35	35	35	26	31	26	33	11	29	22	29	26	24	18	29	21	33	22	34	17
19....	25	12	28	16	31	22	37	26	37	23	36	25	32	24	31	1	30	12	32	24	28	14	31	19	31	16	29	13
20....	31	18	28	5	34	24	37	32	38	30	35	24	34	23	30	- 1	32	8	35	21	34	26	33	13	34	18	33	14
21....	32	28	33	26	39	33	41	35	46	35	46	33	38	32	34	23	35	32	37	29	34	27	35	33	38	31	33	24
22....	32	26	36	27	35	31	37	32	41	31	48	33	35	31	34	29	35	33	36	32	36	33	43	35	36	32	37	32
23....	26	18	31	23	31	26	32	27	34	29	33	29	32	26	30	16	34	18	32	25	33	29	34	30	32	27	34	27
24....	27	10	31	20	42	26	42	26	42	30	42	30	37	26	36	7	36	17	40	24	36	30	33	41	25	33	27	37
25....	12	- 1	34	10	36	17	37	25	37	32	38	32	36	15	31	7	34	15	32	16	36	22	40	23	39	35	36	26
Mns.	26.2	14.3	32.3	18.1	34.3	23.0	38.1	26.8	40.1	29.8	39.9	27.7	33.1	22.7	31.3	13.3	32.6	20.3	33.9	23.4	31.1	21.8	36.3	25.8	37.9	25.8	34.7	22.9

Date.	Lower Michigan.						Ohio.						New York.						Vermont.									
	Detroit.	Muskegon.	Saginaw, West Side.	Cleveland.		Lima.		Sandusky.		Toledo.		Erie, Pa.	Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.	Northfield.						
				Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1....	35	26	42	36	34	28	37	27	37	17	38	27	30	25	38	28	39	31	37	32	38	37	31	40	32	39	30	
2....	34	29	35	28	34	23	31	31	37	23	31	30	40	30	37	29	34	15	36	27	38	35	35	29	36	28		
3....	29	24	30	22	29	16	31	23	33	25	31	24	30	19	31	23	29	19	35	3	28	13	29	11	28	13		
4....	27	17	33	13	31	11	30	22	28	1	27	16	29	15	32	20	30	15	33	- 3	28	16	21	5	16	4		
5....	35	21	40	23	41	35	37	24	37	17	38	21	39	20	38	24	39	27	37	13	40	21	30	5	26	2		
6....	42	27	40	30	47	29	46	30	43	26	47	28	45	26	46	33	45	38	40	35	49	34	47	34	40	30	42	23
7....	46	32	42	30	42	35	51	34	44	30	50	36	47	32	52	40	48	39	48	37	52	36	47	31	52	17		
8....	47	36	45	30	46	27	53	40	52	38	51	41	50	39	53	42	50	43	45	37	54	49	50	45	46	36	47	
9....	49	46	42	38	51	44	52	48	52	41	53	46	53	47	52	48	49	43	48	44	53	45	44	43	48	38	47	29
10....	59	47	53	29	57	47	61	48	59	47	62	50	58	50	62	48	57	46	67	49	63	47	51	41	49	34	34	28
11....	56	40	41	36	58	39	59	42	60	45	59	42	56	40	61	44	60	45	61	60	56	61	53	56	40	61	38	
12....	41	37	33	41	45	32	47	37	44	33	41	37	44	38	45	38	56	39	41	58	41	60	41	58	40	57	48	
13....	39	31	40	26	39	26	33	39	31	38	30	31	30	38	30	38	34	40	32	39	31	41	33	40	32	48	32	
14....	37	27	32	29	34	25	40	30	32	27	37	30	36	29	39	20	38	30	39	29	40	29	39	30	36	27		
15....	37	34	40	25	35	29	31	37	34	36	32	36	32	37	35	42	35	36	28	43	35	42	33	35	31	34	28	
16....	35	33	35	28	33	27	51	35	45	26	47	35	43	33	52	35	49	34	39	26	47	36	46	34	3			